MODEL 4050

SERVICE MANUAL

REF DESIG OR ITEM NO.	DESCRIPTION	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
	PCB ASSEMBLY			
I C IC 1 IC 2 IC 3	A/D Converter Microcomputer Voltage Reference	MSM6266 MSM6502B-44 LT1034CZ		1 1 1
TRANSISTOR Q 1 Q 2 Q 3 Q 4 Q 5 Q 6 Q 7 Q 8	FET NPN FET PNP PNP NPN NPN NPN	2SK372-V DTC114TF 2SK372-V 2SA874-R 2SA874-R 2SC536-SP-F 2SC536-SP-F 2SC536-SP-F		
DIODE				
D 1 D 2 D 3 D 4 D 5 D 6 D 7 D 8 D 9 D 10 D 11 D 12 D 13 D 14	S i S i S i S i S i S i S i S i S i S i	DAN201 DAN201 DAN201 1S1588 DAP201 1S1588 1SS227 DAP201 1S1588 1SS227 HZ-7A GMA01 GMA01 GMA01		

REF DESIG OR ITEM NO.	DESCRIPTION	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
X 1	Crystal 32.768kHz			I
P l	Thermistor $\mathrm{lk}\Omega$			1
Z 1	Varistor 2400 V			1
BZ	Buzzer			1
K	Relay			1
LCD	Display	FRD-8320		1
H 1 H 2 H 3 H 4 L 1	HIC HIC HIC Inductor 12.5 μ H	H-105B H-111 H-104C H-110		1 1 1

REF DESIG OR ITEM NO.	1	DESCR	IPTIO	N	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
RESISTOR		- UNIT	: OHM-				
R 1 R 2 R 3 R 5 R 7 R 8 R 9 R 10	M F M F M F M F M F M F M F	1M 200k 9.9M 13k 30.1k 115k 16.9k 300 560k 160k	± 5% ± 1% ± 1% ± 0.25% ± 0.5% ± 0.25% ± 1% ± 5% ± 5%	0.8W 0.16W 1W 0.16W 0.25W 0.25W 0.25W 0.16W 0.16W			
R 11 R 12 R 13 R 14 R 15 R 16 R 17 R 18 R 19 R 20	M F M F M F M F M F M F	110k 330k 1k 33k 470 470 10M 1M 4.7k	+1 +1 +1 +1 +1 +1 +1 +1 +1 +1 +1 +1 +1 +	0.16W 0.16W 0.16W 0.16W 0.16W 0.3W 0.16W 0.16W			
R 21 R 22 R 23 R 24 R 25 R 26 R 27 R 28	M F M F W W M F M F	1M 9k 1k 5 0.005 1k 1M 3k	± 5% ± 0.1% ± 0.1% ± 0.5% ± 5% ± 5% ± 2%	0.16W 0.25W 0.25W 1W 0.16W 0.16W 0.16W	SH 1422-01A +3000ppm		1 1 1 1 1 1

REF DESIG OR ITEM NO.	DESCRIPTION	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
POTENTIO- METER	- UNIT : OHM-			
RV 1 RV 2 RV 3 RV 4	Cermet 50k 0.3W ± 20% Cermet 200k 0.3W ± 25% Cermet 1k 0.3W ± 25% Cermet 1k 0.3W ± 20%			1 1 1
CAPASITOR	- UNIT : FARAD-			
C 1 C 2 C 3 C 4 C 5 C 6 C 7 C 8 C 9 C 10	Polyes $1000V$ 0.022μ $\pm 10\%$ Polyes $50V$ 0.022μ $\pm 10\%$ A L $50V$ 2.2μ $\pm 20\%$ Polyes $50V$ 0.068μ $\pm 5\%$ CER $50V$ $1000p$ $\pm 5\%$ A L $16V$ 10μ $\pm 20\%$ A L $50V$ 0.47μ $\pm 20\%$			1 1 1 1 1 1 1
C 11 C 12 C 13 C 14 C 15 C 16 C 17 C 18 C 19 C 20	A L $16V$ 10μ $\pm 20\%$ A L $16V$ 10μ $\pm 20\%$ A L $16V$ 10μ $\pm 20\%$ CER $50V$ $22p$ $\pm 5\%$ CER $50V$ $22p$ $\pm 5\%$ CER $50V$ $82p$ $\pm 5\%$ Polyes $50V$ 0.001μ $\pm 10\%$ Polyes $50V$ 0.0047μ $\pm 10\%$ CER $25V$ 0.01μ $+80/-20\%$ A L $16V$ 10μ $\pm 20\%$			
CA 1	C-Network 1000p×6 ± 20%			1

REF DESIG OR ITEM NO.	DESCRIPTION	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
SWITCH				
S 1 S 2 S 3	Rotary FUNCTION Push POWER Tact DATA-H			1 1 1
FUSE				
F 1 F 2	0.5A-F/250 V ϕ 5×20mm 4A-F/600 V ϕ 10×35mm			1
JUMPER				
J l	RED 115mm			7
PCB	P. C. Board	≠ 4050-01D-S		1

REF DESIG OR ITEM NO.	DESCRIPTION	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
1	Rubber Foot	SL 1655-01A		2
2	Stand	ST 1587-01A		1
3	Rear Case Ass'y Rear Case (Caution Ref, No.)	ST 1583-01A ST 1639-01A		1 (1)
4	Coil Spring	SK 1026-01A		I
5	Shield Al Film (Rear)	SL 1728-03A		1
6	Insulation Film	SL 1773-02A		1
7	Input Jack	SH 1458-01A		3
8	O Ring	P 6		3
9	Fuse Holder	SL 1677-01A		2
1 0	Fuse Holder	SH 1090-01		2
1 1	Case, Battery	ST 1586-01A		1
1 2	Battery Contact (W)	SL 1679-01A		1
1 3	Battery Contact (S)	SL 1678-02A		2
1 5	Shield Al Film (Front)	SL 1727-02A		1
1 6	Color for Shaft	CSTW-6		1
17	Front Case Ass'y Front Case (25) Filter Silk-Print Ref, No. (14) Insert Metal	SY 1012-01A ST 1582-01A ST 1588-01A SN 2392-01A SH 1405-01C		1 (1) (1) (1) (4)
18	Rubber, Switch Knob B (White)	ST 1612-01A		1

REF DESIG OR ITEM NO.	DESCRIPTION	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
1 9	Switch Knob Stopper	ST 1611-01A		1
2 0	Side Switch Plate	SN 2399-01A		1
2 1	Dust Protector	SL 1696-01A		1
2 3	Rotary Knob Ass'y Rotary, Knob (22) Shaft	ST 1589-01A SH 1435-02A		1 (1) (1)
2 4	Switch Plate	SN 2397-01A		1
2 6	Rubber, Switch Cover (Red)	ST 1622-01A		1
2 7	Rubber, Switch Knob C (White)	ST 1594-01A		3
2 8	Switch Knob A	ST 1592-01A		1
2 9	Switch Stopper	ST 1590-01A		1
3 0	LCD Holder B	ST 1585-01A		1
3 1	LCD Conductive Rubber	SH 1443-01B		I
3 2	LCD Holder A	ST 1584-01A		1
3 3	PHILIPS Tapping	M2.6 × 6		7
3 4	Shield Box	SL 1729-01A		1
3 5	Pan Head Screw	M3 × 12		4
3 6	Serial Label	SN 2398-01A		

cp Heam Function Hange Input Adjust Tolerance no Voltage := v 400mV Short - -0.1 ~ 0.1mV no Voltage := v 400mV 380.00mV W 2 37.95 ~ 380.4mV AC Voltage ~ V 380.00mV - 37.56 ~ 380.4 V AC Voltage ~ V 400mV Short - 997 ~ 1003 V AC Voltage A V 380.00mV - 37.72 ~ 382.8 V AC Voltage A V 380.00mV - 37.72 ~ 382.8 V AC Voltage A V 380.00mV - 37.72 ~ 382.8 V		Adjustment & Check	neck .					
11em		lode1 4050						4
DC Voltage == V 400mV Short - -0.1 -380.00mV -380.00mV - -379.6 -380.00mV - -379.6 -380.00mV - -379.6 40 V 38.000 V - 37.96 AC Voltage V 400 V - 379.6 AC Voltage V 400mV Short - 997.2 AC Voltage V 400mV Short - 377.2 100Hz - - 380.00mV - 377.2 100Hz - - 377.2 - 40 V 380.00 V - 377.2 - 40 V 380.00 V - 377.2 -	Step	ltem	Function	Range	Input	Adjust	Tolerance	
AC Voltage	_	DC Voltage	1	400mV	Short		$-0.1\sim0.1$ mV	:
AC Voltage A V 3.8000 V B V 379.6 ~ AC Voltage V 400 V 380.00 V B 379.6 ~ AC Voltage V 400 V 380.00 V B 379.6 ~ AC Voltage V 400 W Short B 377.2 ~ 100 V 380.00 W B 377.2 ~ 377.2 ~ 40 V 380.00 V B 380.00 V B 377.2 ~ 400 V 380.00 V B 377.2 ~ 400 V 380.00 V B 377.2 ~					380.00mV	RV 1	$379.6\sim380.4$ mV	; ; ; ; t
AC Voltage ~ V 400 W 380.00 V - 1000.0 V - 1000 V 1000.0 V - 1000 W 1000 W - 1000 W 380.00 W - 1000 W 380.00 W - 1000 W 1000 W -					-380.00mV		$-379.6 \sim -380.4$ mV	: ! !
AC Voltage ~ V 400 V 380.000 V - 1000 V 1000 O V - 1000 V 1000 O V - 1000 V 1000 O V - 10000 V 10000 V - 100000 V - 100000 V 100000 V - 100000 V 100000 V 100000 V 100000 V 100000 V - 1000000 V 100000 V - 1000000 V - 100000 V -	2				3.8000 V		$3.796 \sim 3.804$ V	1
AC Voltage ~ V 400 v 1000.0 v - AC Voltage ~ V 400mV Short - 380.00mV HV 3 100Hz - 4 v 3.8000 v - 40 v 38.000 v - 100Hz - 10	3			40 V	38.000 V	1	$37.96 \sim 38.04$ V	t 1 1 1
AC Voltage ~ V 400mV Short — 380.00mV HV 3 100Hz 4 V 3.8000 V — 100Hz 400 V 380.000 V — 100Hz 100Hz	4			400 V	380.00 V	ı	$379.6 \sim 380.4 \text{ V}$	1 1 1
AC Voltage ~ V 400mV Short — 380.00mV HV 3 100Hz 4 V 3.8000 V — 100Hz 40 V 38.000 V — 100Hz 100Hz	5		1	1000 V	1000.0 v		997 ~ 1003 V	: (() F
380.00mV RV 3 100Hz 4 V 3.8000 V — 100Hz 400 V 380.00 V — 100Hz	-	AC Voltage	1	400mV	Short	i	₹	!
4 V 3.8000 V - 3.772 ~ 100Hz					380.00mV 100Hz	RV 3	$377.2 \sim 382.8$ mV	1 1 1 1 1
40 v 38.000 v – 37.72 ~ 100 llz – 377.2 ~ 100 llz – 377.2 ~	2				3.8000 V 100Hz	l	$3.772\sim3.828$ V	1 1 1
400 V 380.00 V − 377.2 ~ 100Hz	က			40 V	38.000 V 100Hz			1 1 1 1
	4			400 V	380.00 V 100Hz		}	: 1 1 1

	Adjustment & Check	eck				
	Madel 4050					4
Step	Item	Function	Range	Input	Adjust	Tolerance
5	AC Voltage	>	750 V	750.00 V 100Hz		!
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
_	DC Current	V :::	40mA	Short	į	$-0.02 \sim 0.02$
				38.000mA	ſ	$37.62 \sim 38.38$
2			400mA	380.00шА	ţ	$375.5 \sim 384.5$
က			10 A	10.000 A	1	$9.88 \sim 10.12$
t 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
-	AC Current	v ~	40mA	Short	\$	$0.00 \sim 0.05$
				38.000mA 100Hz	1	$37.24 \sim 38.76$
2			400mA	380.00mA 100Hz		$372.4 \sim 387.6$
က			10 A	10.000 A 100Hz		$9.78\sim10.22$

7 0	Adjustment & Check	leck					3
	Model 4050						, 4
Step	Item	Function	Range	lnput	Adjust	Tolerance	
7	Resistance	a	400 Ω	Short	1	$0.0\sim0.2~\Omega$	
			<u>:</u>	380.00 \Q	: : : : : : : :	$378.9\sim381.1~\Omega$	1 ! !
2			джь	3.8000кΩ	: : : : :	$3.789\sim3.811$ k Ω	, 1 1 1 1
3			40kΩ	3B. 000kΩ		$37.89\sim38.11$ k Ω	
4			400kΩ	380.00kΩ	ļ	378.9 ∼ 381.1kΩ	1 1 1
5	·		ΩWÞ	3.8000МΩ	[$3.781 \sim 3.819$ MD	1 1 1 1 1
9	,		40MΩ	3B. 000MΩ	ı	$37.62\sim38.38$ MD	
-	Frequency	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Short	ı	$0 \sim 1$	· · · · · · · · · · · · · · · · · · ·
				9000Hz 1 v	l	8998 ~ 9002Hz	1 1 1 1 1
=	Temperrature test		-20 \sim $700^{\circ}\mathrm{C}$	Short	RV 4	Room Temperature ± 2°C	
	Continuity- check	((c)	400 Ω	$0\sim 100~\Omega$		40 Ω or less	
) 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						1 1 1 1
*	efore starting	calibratic	on, allow t	* Before starting calibration, allow thirty minutes for mul		timeter stabilization to room temperature.	

Function Range loput Adjust Tolerance a 4 4 4 5 6 6 6 6 6 6 6 6 6							
Range Input Adjust Tolerance	Adjustment & Check	ਹ	neck				4
Function Range Input Adjust ment ment	Model 4050						4
ADP 0~0pen — (forward voltage) — (forward voltage) — 380.00mV — 380.00mV	Step Item		Function	Range	lnput	Adjust	Toleran
(forward voltage)	Diode test	ىد	⇉	~0	Open	ļ	" ТО "
0~4000 Short2~ 380.00mV - 3789~				A 000.7	Diode (forward voltage)	١	$0.400 \sim 0.700 \mathrm{mV}$ Silicon diode
_ 3789 ~	Adaptor-	1 1 1 1	ADP	0~4000	Short	1	$7\sim 2$
	range				DC 380.00mV		$3789 \sim 3811$
	, 	; ; 1 1	; ; ; ; ; ; ; ;				
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